Successful Conservative Management of Placenta Previa Totalis and Extensive Percreta

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The incidence of abnormal placentation, including placenta accreta, increta and percreta, ranges from 1 in 540 to 1 in 93,000 deliveries [1]. Placenta percreta is defined as the penetration of trophoblastic tissue into the myometrium or serosa of the uterus. Severe hemorrhage may occur with attempts to manually separate the placenta from the uterus following delivery. The increased frequency of cesarean delivery over the past two decades has resulted in a greater incidence of abnormal placentation as more women enter into subsequent pregnancies with a history of operative deliveries [2]. The treatment of abnormal placentation has evolved with time. We report a case of placenta previa totalis and extensive percreta that was successfully managed with preservation of the uterus.

A 32-year-old woman, gravida 2, para 1, was referred to our hospital at 7 weeks of gestation for evaluation of an asymptomatic pregnancy within a cesarean scar, as demonstrated by ultrasound. She had a history of cesarean section with an incision in the lower uterine segment. Termination of the pregnancy was recommended. However, the patient decided to continue the pregnancy because of religious beliefs. The antenatal examinations were unremarkable with the exception of intermittent painless vaginal spotting. An ultrasound examination at 27 weeks of gestation showed the absence of a normal subplacental sonolucent layer and deep invasion of the anterior lower uterine segment by the placenta. Magnetic resonance imaging (MRI) at 32 weeks of gestation demonstrated that the placenta occupied the entire lower uterine segment with some obliteration of the uteroplacental interface and small serosal interruptions of the left posterior wall of the bladder without mucosal invasion (Figure 1). The findings were consistent with a diagnosis of placenta percreta.

A classical cesarean section was performed at 34+ weeks of gestation, after ultrasound examination indicated an adequate fetal body weight. Angioembolization catheters were placed bilaterally through the femoral arteries on the morning of surgery. At laparotomy, the previous cesarean scar was nearly completely dehiscent and involved the lower one-third of the uterus. The placenta was visualized beneath a paper-thin membrane-like peritoneum covering the area of dehiscence, and engorged blood vessels crossing through the membrane were noted (Figure 2). The fetus was delivered via breech extraction, and had Apgar scores of 5 and 9 at 1 and 5 minutes, respectively. The placenta was not removed and was left in place. Immediately after the infant was delivered, bilateral transarterial embolization of the internal iliac arteries using Gelfoam was performed by radiologists present in the delivery room. The embolization technique was done as previously described [3]. The amount of intraoperative blood loss was approximately 2,000 mL. The postoperative

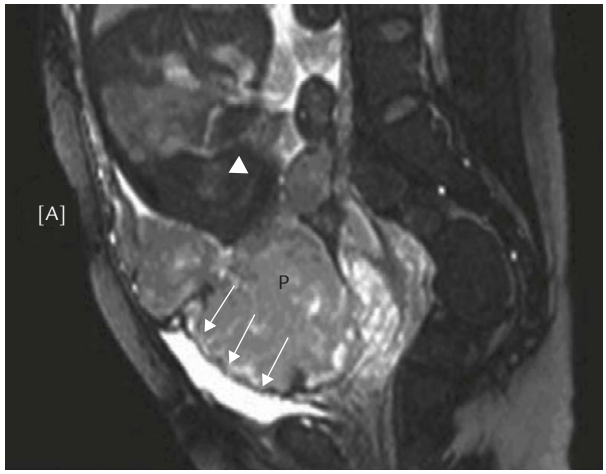

Figure 1. Obliteration of the uteroplacental interface and small serosal interruption in the left posterior wall of the bladder without mucosal invasion (arrows). The arrowhead indicates the fetal part. P = placenta.

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Accepted: July 18, 2007

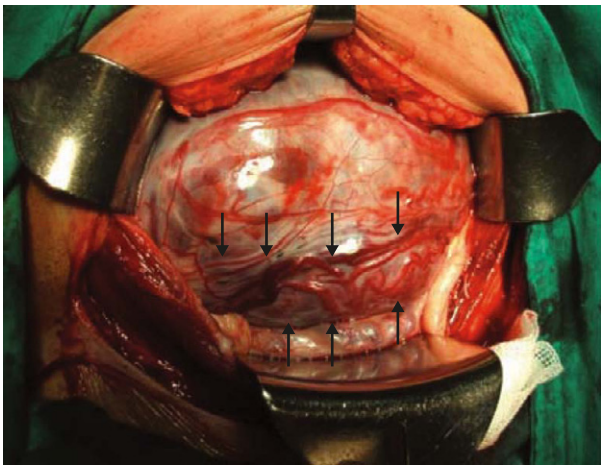

Figure 2. Complete dehiscence of the previous cesarean scar with a paper-thin membrane-like peritoneum covering. The prominent engorged vessels (arrows) of the placenta beneath the peritoneum can be seen.

course was uneventful and the patient was discharged on the 13th postoperative day.

During follow-up in the outpatient department, serial abdominal ultrasonography and serum β-human chorionic gonadotropin (β-hCG) levels were used to monitor the involution of the uterus and the placenta. Methotrexate (50 mg) was administered intramuscularly on the 30th, 32nd and 34th postoperative days because of an unsatisfactory decline in the β-hCG level. The serum β-hCG level subsequently decreased to normal 68 days after methotrexate therapy was initiated. A necrotic mass measuring 5 cm × 2 cm × 2 cm was expelled from the vagina on the 108th postoperative day. Ultrasonographic examination on the 164th postoperative day showed that the placenta had completely regressed. Menstruation resumed 2 months after normalization of the uterus, and hysteroscopy revealed sclerotic changes and local fibrosis of the lower segment of the uterus.

Placenta percreta is the most serious of placental implantation anomalies beyond the uterine serosa. Placenta percreta can only be diagnosed at the time of delivery, or may be suggested antenatally by ultrasonographic or MRI findings in patients whose clinical history, such as a previous abdominal delivery, previous uterine surgery, a suction dilatation and curettage, or placenta previa, raises a suspicion.

Based on a literature search using MEDLINE, we identified 11 cases diagnosed with placenta percreta that were treated conservatively with successful uterine preservation from 1995 to the present. The Table shows the pertinent details of each case. Legro et al [4] reported one case with placenta percreta that was left *in situ* after a vaginal delivery. Methotrexate was administered weekly at a dose of 1 mg/kg for 10 weeks. A hysteroscopic examination showed a normal uterine cavity 8 months later. In addition, this patient had an uneventful pregnancy, labor and vaginal delivery 2 years later. Clement et al [11] reported two cases with placenta percreta in which the placenta was left *in situ*. One patient was treated with embolization of the uterine arteries and the other received no intervention. Both placentas were spontaneously resorbed between 5 and 6 months later, and the patients resumed normal menstrual cycles thereafter. Descargues et al [8] described a successful experience involving the delayed manual removal of the placenta 12 days after delivery. Verma and Maggiorotto [13] reported a case of a second-trimester cervical pregnancy and placenta percreta treated with a combination of multiple systemic methotrexate injections, removal of the fetal bones, a cervical cerclage, and placement of a Foley catheter for control of hemorrhage. The patient subsequently had a normal intrauterine pregnancy and delivered a full-term healthy infant by cesarean section. In general, the prognosis of placenta percreta is good if the placenta is left *in situ* and adjuvant therapy, including methotrexate, transarterial embolization of the uterine arteries or both, is given [4,6,8–12]. The optional use of adjuvant therapy accelerates the involution of the placenta. Placentas that are left *in situ* continue to involute slowly from weeks to months and ultimately regress completely.

Placenta previa totalis and percreta can be diagnosed during the second trimester by Doppler ultrasound or MRI, although MRI appears to provide a more accurate diagnosis [14]. The use of MRI has the advantages of superior image resolution, and precise determination of the extent of placental invasion into the myometrium and surrounding organs, such as the bladder.

The involution of the placenta can be assessed by serial ultrasonography and serum β-hCG titers. The outcome of leaving the placenta in place varies widely, and includes complete remission, an intrauterine infection requiring prolonged administration of antibiotics, delayed vaginal bleeding and hysterectomy.

In our case, the patient's desire to continue the pregnancy provided a unique opportunity to observe the dynamics of placenta previa totalis and extensive percreta. Intraoperative transarterial embolization of the internal iliac arteries with Gelfoam was used to control blood loss, reduce blood perfusion into the uterus and accelerate shedding of the placenta. Methotrexate, with its anti-trophoblastic effects, enhances the involution of the placenta, but its use depends on the rate of decline of the serum β-hCG level.

A successful outcome can be achieved in properly selected candidates by non-surgical treatment of placenta previa totalis and extensive percreta, with the placenta

Table. Patient characteristics and outcome of placenta percreta treated conservatively with successful uterine preservation (1994 to the present)

Author	Publication year	No. of cases	Gravida, para	GA (wk)	Adjuvant therapy	Duration of involution	Subsequent pregnancy
Legro et al [4]	1994	1	2, 1	35	MTX, weekly dose of 1 mg/kg for 10 weeks	8 mo	Vaginal delivery 2 years later
Lee et al [5]	1995	1	1, 0	17	Packing of uterine defect on posterior wall	96th day	Not reported
O'Brien et al [6]	1996	1	2, 1	34	MTX, weekly dose of 1 mg/kg for 6 weeks	6 wk	Not reported
Palacios et al [7]	2000	1	6, 5	35	Ligation of newly formed vessels between the bladder and uterus; uterine, ovarian, and two posterior cervical arteries	Not reported	Not reported
Descargues et al [8]	2000	1	8, 4	36	TAE	12 mo	Not reported
Henrich et al [9]	2002	1	2, 1	36	MTX, weekly dose of 1 mg/kg for 6 weeks	7 wk	Not reported
Alkazaleh et al [10]	2004	1	Not available	Not available	TAE	6 mo	Not reported
Clement et al [11]	2004	2	4, 3 6, 5	37 25	TAE TAE	Both at 5 and 6 mo	Not reported
Weinstein et al [12]	2005	1	13, 9	39	TAE	3 mo	None
Verma and Maggiorotto [13]	2007	1	6, 3	15	Two doses of MTX (75 mg/m^2 body surface area)	8 wk	Full-term healthy infant by cesarean section

GA = gestational age; MTX = methotrexate; TAE = transarterial embolization.

left *in situ*, through the use of intraoperative embolization and subsequent methotrexate administration. If adequate hospital facilities are available, conservative treatment reduces maternal morbidity and preserves fertility [9].

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